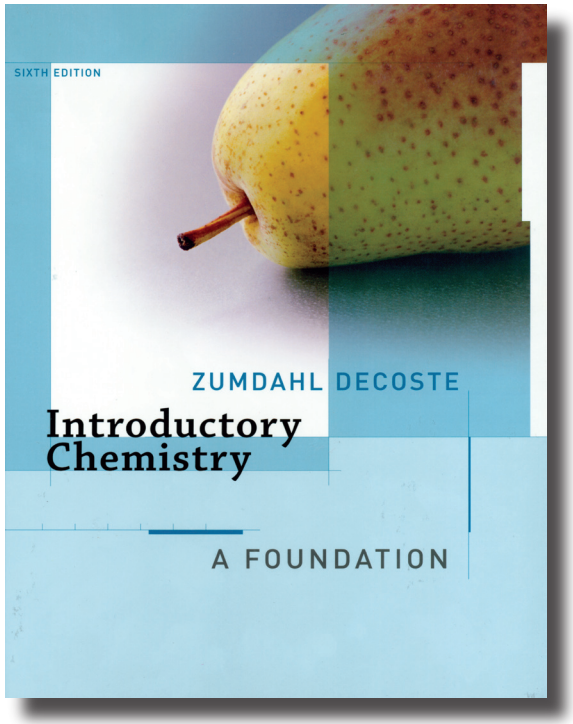
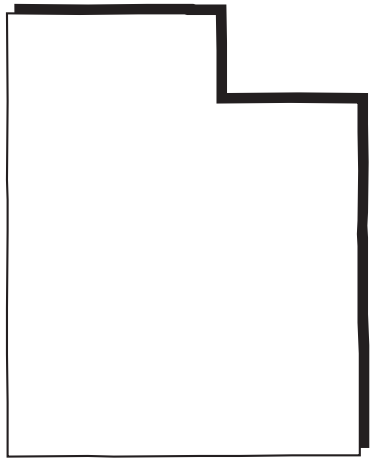


Introductory Chemistry

A FOUNDATION

textbook alignment to the

Utah Core Curriculum Chemistry



McDougal Littell
A DIVISION OF HOUGHTON MIFFLIN

Textbook Alignment to the Utah Core – Chemistry

This alignment has been completed using an "Independent Alignment Vendor" from the USOE approved list (www.schools.utah.gov/curr/imc/indvendor.html.) Yes __ No X

Name of Company and Individual Conducting Alignment: McDougal Littell and Betty L. Schiddell

A "Credential Sheet" has been completed on the above company/evaluator and is (Please check one of the following):

_ On record with the USOE.

X The "Credential Sheet" is attached to this alignment.

Instructional Materials Evaluation Criteria (name and grade of the core document used to align): Chemistry Core Curriculum

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Publisher: McDougal Littell

Overall percentage of coverage in the *Student Edition (SE) and Teacher Edition (TE)* of the Utah State Core Curriculum: _____%

Overall percentage of coverage in *ancillary materials* of the Utah Core Curriculum: _____%

STANDARD I: Students will understand that all matter in the universe has a common origin and is made of atoms, which have structure and can be systematically arranged on the periodic table.				
Percentage of coverage in the *student and teacher edition* for Standard I:_____ %		**Percentage of coverage not in student or teacher edition, but covered in the *ancillary material* for Standard I: _____%**		
OBJECTIVES & INDICATORS		**Coverage in *Student Edition(SE) and Teacher Edition (TE)* (pg #'s, etc.)**	**Coverage in *Ancillary Material* (titles, pg #'s, etc.)**	***Not covered in TE, SE or ancillaries***
Objective 1.1: Recognize the origin and distribution of elements in the universe.				
a.	Identify evidence supporting the assumption that matter in the universe has a common origin.	**SE/TE:** 55		
b.	Recognize that all matter in the universe and on earth is composed of the same elements.	**SE/TE:** 73-75, 103 (#1), 105 (#5)		
c.	Identify the distribution of elements in the universe.	**SE/TE:** 73-75, 103 (#1), 105 (#5)		
d.	Compare the occurrence of heavier elements on earth and the universe.	**SE/TE:** ***Opportunities to address this standard can be found on pages:*** 74, 105 (#5)		

OBJECTIVES & INDICATORS		Coverage in *Student Edition(SE) and Teacher Edition (TE)* (pg #'s, etc.)	Coverage in *Ancillary Material* (titles, pg #'s, etc.)	*Not covered in TE, SE or ancillaries*
Objective 1.2: Relate the structure, behavior, and scale of an atom to the particles that compose it.				
a.	Summarize the major experimental evidence that led to the development of various atomic models, both historical and current.	**SE/TE:** 81-84, 106 (#21-22), 303-304, 311-313, 317-318, 333 (#1-2), 334 (#21-28) **TE: 81-85 (Historical Notes)**		
b.	Evaluate the limitations of using models to describe atoms.	**SE/TE:** 81-84, 303-304, 311-313, 317-318		
c.	Discriminate between the relative size, charge, and position of protons, neutrons, and electrons in the atom.	**SE/TE:** 81-84, 106 (#23), 107 (#24-28), 303-304		
d.	Generalize the relationship of proton number to the element's identity.	**SE/TE:** 85-86, 107 (#31)		
e.	Relate the mass and number of atoms to the gram-sized quantities of matter in a mole.	**SE/TE:** 85-86, 209-210, 212-213, 230 (#10), 231 (#23) **TE: 209 (Demonstration), 210 (Historical Note), 211 (Activity)**		
Objective 1.3: Correlate atomic structure and the physical and chemical properties of an element to the position of the element on the periodic table.				
a.	Use the periodic table to correlate the number of protons, neutrons, and electrons in an atom.	**SE/TE:** 89-90, 107 (#35)		
b.	Compare the number of protons and neutrons in isotopes of the same element.	**SE/TE:** 85-88, 107 (#37-42)		
c.	Identify similarities in chemical behavior of elements within a group.	**SE/TE:** 90-91, 108 (#44-54), 328-330 **TE: 91 (Additional Examples 4.5), 327-329 (Background Information)**	***Introductory Chemistry in the Laboratory:*** Experiment 7	
d.	Generalize trends in reactivity of elements within a group to trends in other groups.	**SE/TE:** 327-330, 336 (#71-72, 79) **TE: 332-333 (Background Information)**	***Introductory Chemistry in the Laboratory:*** Experiment 7	
e.	Compare the properties of elements (e.g., metal, nonmetallic, metalloid) based on their position in the periodic table.	**SE/TE:** 90-91 108 (#45-50), 328-330	***Introductory Chemistry in the Laboratory:*** Experiment 7	

STANDARD II: Students will understand the relationship between energy changes in the atom specific to the movement of electrons between energy levels in an atom resulting in the emission of absorption of quantum energy. They will also understand that the emission of high-energy particles results from nuclear changes and that matter can be converted to energy during nuclear reactions.				
Percentage of coverage in the *student and teacher edition* for Standard II:_____ %		**Percentage of coverage not in student or teacher edition, but covered in the *ancillary material* for Standard II: _____%**		
OBJECTIVES & INDICATORS		**Coverage in *Student Edition(SE) and Teacher Edition (TE)* (pg #'s, etc.)**	**Coverage in *Ancillary Material* (titles, pg #'s, etc.)**	***Not covered in TE, SE or ancillaries***
Objective 2.1: Evaluate quantum energy changes in the atom in terms of the energy contained in light emissions.				
a.	Identify the relationship between wavelength and light energy.	**SE/TE:** 304-306 **TE: 304 (Demonstration)**		
b.	Examine evidence from the lab indicating that energy is absorbed or released in discrete units when electrons move from one energy level to another.	**TE: 308 (Demonstration), 309-310 (Demonstration)**	***Introductory Chemistry in the Laboratory:*** Experiment 17	
c.	Correlate the energy in a photon to the color of light emitted.	**SE/TE:** 304-306, 308, 310	***Introductory Chemistry in the Laboratory:*** Experiment 17	
d.	After observing spectral emissions in the lab (e.g., flame test, spectrum tubes), identify unknown elements by comparison to known emission spectra.	**TE: 308 (Demonstration), 309-310 (Demonstration)**	***Introductory Chemistry in the Laboratory:*** Experiment 17	

OBJECTIVES & INDICATORS		**Coverage in *Student Edition(SE) and Teacher Edition (TE) (*pg #'s, etc.)**	**Coverage in *Ancillary Material* (titles, pg #'s, etc.)**	***Not covered in TE, SE or ancillaries***
Objective 2.2: Evaluate how changes in the nucleus of an atom result in emission of radioactivity.				
a.	Recognize that radioactivity particles and wavelike radiations are products of the decay of an unstable nucleus.	**SE/TE:** 584-586	***Introductory Chemistry in the Laboratory:*** Experiment 29	
b.	Interpret graphical data relating half-life and age of a radioactive substance.	**SE/TE:** ***Opportunities to address this standard can be found on pages:*** 589-591, 603 (#37)		
c.	Compare the mass, energy, and penetrating power of alpha, beta, and gamma radiation.	**SE/TE:** 584-585, 601 (#7-8), 602 (#12-13)	***Introductory Chemistry in the Laboratory:*** Experiment 29	
d.	Compare the strong nuclear force to the amount of energy released in a nuclear reaction and contrast it to the amount of energy released in a chemical reaction.	**SE/TE:** 593-595, 597-598, 604 (#51, 59)		
e.	After researching, evaluate and report the effects of nuclear radiation on humans or other organisms.	**SE/TE:** 598-600, 604 (#63-68) **TE: 598 (Historical Background)**		

STANDARD III: Students will understand chemical bonding and the relationship of the type of bonding to the chemical and physical properties of substances.				
Percentage of coverage in the *student and teacher edition* for Standard III:_____ %		**Percentage of coverage not in student or teacher edition, but covered in the *ancillary material* for Standard III: _____%**		
OBJECTIVES & INDICATORS		**Coverage in *Student Edition(SE) and Teacher Edition (TE) (*pg #'s, etc.)**	**Coverage in *Ancillary Material* (titles, pg #'s, etc.)**	***Not covered in TE, SE or ancillaries***
Objective 3.1: Analyze the relationship between the valence (outermost) electrons of an atom and the type of bond formed between atoms.				
a.	Determine the number of valence electrons in atoms using the periodic table.	**SE/TE:** 321-327, 337 (#98-99)		
b.	Predict that charge an atom will acquire when it forms an ion by gaining or losing electrons.	**SE/TE:** 96-99, 108 (#65-72), 109 (#77-78)		
c.	Predict bond types based on the behavior of valence (outermost) electrons.	**SE/TE:** 341-343 **TE: 341-342 (Background Information)**		
d.	Compare covalent, ionic, and metallic bonds with respect to electron behavior and relative bond strengths.	**SE/TE:** 341-345, 347-350, 441		

OBJECTIVES & INDICATORS		Coverage in *Student Edition(SE) and Teacher Edition (TE) (*pg #'s, etc.)	Coverage in *Ancillary Material* (titles, pg #'s, etc.)	*Not covered in TE, SE or ancillaries*
Objective 3.2: Explain that the properties of a compound may be different from those of the elements or compounds from which it is formed.				
a.	Use a chemical formula to represent the names of elements and numbers of atoms in a compound and recognize that the formula is unique to the specific compound.	**SE/TE:** 60-61, 76-77, 79-81, 100-102, 105 (#8-11), 106 (#12-14, 19-20), 109 (#83-84) **TE: 102 (Additional Examples 4.6)**		
b.	Compare the physical properties of a compound to the elements that form it.	**SE/TE:** ***Opportunities to address this standard can be found on pages:*** 56-57, 100-101 **TE: 76 (Demonstration), 100 (Demonstration)**		
c.	Compare the chemical properties of a compound to the elements that form it.	**SE/TE:** ***Opportunities to address this standard can be found on pages:*** 56-57, 100-101 **TE: 76 (Demonstration), 100 (Demonstration)**		
d.	Explain that combining elements in different proportions results in the formation of different compounds with different properties.	**SE/TE:** ***Opportunities to address this standard can be found on pages:*** 608		
Objective 3.3: Relate the properties of simple compounds to the type of bonding, shape of molecules, and intermolecular forces.				
a.	Generalize, from investigations, the physical properties (e.g., malleability, conductivity, solubility) of substances with different bond types.	**SE/TE:** 100-102, 109 (#79-80)		
b.	Given a model, describe the shape and resulting polarity of water, ammonia, and methane molecules.	**SE/TE:** 346, 363-364, 367 **TE: 364-365 (Activity)**	***Introductory Chemistry in the Laboratory:*** Experiment 18	
c.	Identify how intermolecular forces of hydrogen bonds in water affect a variety of physical, chemical, and biological phenomena (e.g., surface tension, capillary action, boiling point).	**SE/TE:** 428-430, 433-434		

STANDARD IV: Students will understand that in chemical reactions matter and energy change forms, but the amounts of matter and energy do not change.				
Percentage of coverage in the *student and teacher edition* for Standard IV:_____ %		**Percentage of coverage not in student or teacher edition, but covered in the *ancillary material* for Standard IV: _____%**		
OBJECTIVES & INDICATORS		**Coverage in *Student Edition(SE) and Teacher Edition (TE) (*pg #'s, etc.)**	**Coverage in *Ancillary Material* (titles, pg #'s, etc.)**	***Not covered in TE, SE or ancillaries***
Objective 4.1: Identify evidence of chemical reactions and demonstrate how chemical equations are used to describe them.				
a.	Generalize evidences of chemical reactions.	**SE/TE:** 143-145 **TE: 144 (Demonstration), 145 (Demonstration), 146 (Demonstration), 150 (Demonstration)**	***Introductory Chemistry in the Laboratory:*** Experiment 10	
b.	Compare the properties of reactants to the properties of products in a chemical reaction.	**SE/TE:** 147-148, 157 (#1-6)		
c.	Use a chemical equation to describe a simple chemical reaction.	**SE/TE:** 145-149, 157 (#7-13), 158 (#14-28), 159 (#29-34), 160 (#45-47), 161 (#62-63, 65, 67, 69-72), 239 **TE: 148 (Additional Examples 6.1)**		

OBJECTIVES & INDICATORS		**Coverage in *Student Edition(SE) and Teacher Edition (TE) (*pg #'s, etc.)**	**Coverage in *Ancillary Material* (titles, pg #'s, etc.)**	***Not covered in TE, SE or ancillaries***
d.	Recognize that the number of atoms in a chemical reaction does not change.	**SE/TE:** 149-156, 159 (#37-42), 160 (#43-44, 48-57), 161 (#58-59, 64, 66, 68, 73-74) **TE: 153 (Additional Examples 6.2), 154 (Additional Examples 6.3), 155 (Additional Examples 6.4)**		
e.	Determine the molar proportions of the reactants and products in a balanced chemical reaction.	**SE/TE:** 239-243 **TE: 240 (Additional Examples 9.1), 242 (Additional Examples 9.2), 243 (Additional Examples 9.3)**		
f.	Investigate everyday chemical reactions that occur in a student's home (e.g., baking, rusting, bleaching, cleaning).	**SE/TE: *Opportunities to address this standard can be found on pages:*** 59, 60 (Self Check Exercise 3.2a), 67 (#17-18) **TE: 59 (Additional Examples 3.2)**		

OBJECTIVES & INDICATORS		Coverage in *Student Edition(SE) and Teacher Edition (TE) (*pg #'s, etc.)	Coverage in *Ancillary Material* (titles, pg #'s, etc.)	*Not covered in TE, SE or ancillaries*
Objective 4.2: Analyze evidence for the laws of conservation of mass and conservation of energy in chemical reactions.				
a.	Using data from quantitative analysis, identify evidence that supports the conservation of mass in a chemical reaction.	**SE/TE:** ***Opportunities to address this standard can be found on pages:*** 8, 146, 149-156, 207		
b.	Use molar relationships in a balanced chemical reaction to predict the mass of product produced in a simple chemical reaction that goes to completion.	**SE/TE:** 243-248, 261 **TE: 248 (Demonstration), 245 (Additional Examples 9.4), 247 (Additional Examples 9.5),**		
c.	Report evidence of energy transformations in a chemical reaction.	**SE/TE:** 274-276 **TE: 274-275 (Demonstration), 276 (Demonstration)**		
d.	After observing or measuring, classify evidence of temperature change in a chemical reaction as endothermic or exothermic.	**TE: 274-275 (Demonstration)**		
e.	Using either a constructed or a diagrammed electrochemical cell, describe how electrical energy can be produced in a chemical reaction (e.g., half reaction, electron transfer).	**SE/TE:** 566-571 **TE: 566 (Demonstration), 577 (Demonstration)**		
f.	Use collected data, report the loss or gain of heat energy in a chemical reaction.	**SE/TE:** 285-286 **TE: 284 (Demonstration), 286 (Background Information)**	***Introductory Chemistry in the Laboratory:*** Experiment 9	

STANDARD V: Students will understand that many factors influence chemical reactions and some reactions can achieve a state of dynamic equilibrium.				
Percentage of coverage in the *student and teacher edition* for Standard V:_____ %		**Percentage of coverage not in student or teacher edition, but covered in the *ancillary material* for Standard V: _____%**		
OBJECTIVES & INDICATORS		**Coverage in *Student Edition(SE) and Teacher Edition (TE) (*pg #'s, etc.)**	**Coverage in *Ancillary Material* (titles, pg #'s, etc.)**	***Not covered in TE, SE or ancillaries***
Objective 5.1: Evaluate factors specific to collisions (e.g., temperature, particle size, concentration, and catalysts) that affect the rate of chemical reaction.				
a.	Design and conduct an investigation of the factors affecting reaction rate and use the findings to generalize the results to other reactions.	**TE: 516-518 (Demonstrations)**		
b.	Use information from graphs to draw warranted conclusions about reaction rates.	**SE/TE:** 517		
c.	Correlate frequency and energy of collisions to reaction rate.	**SE/TE:** 515-516		
d.	Identify that catalysts are effective in increasing reaction rates.	**SE/TE:** 517-518		

OBJECTIVES & INDICATORS		Coverage in *Student Edition(SE) and Teacher Edition (TE) (*pg #'s, etc.)	Coverage in *Ancillary Material* (titles, pg #'s, etc.)	*Not covered in TE, SE or ancillaries*
Objective 5.2: Recognize that certain reactions do not convert all reactants to products, but achieve a state of dynamic equilibrium that can be changed.				
a.	Explain the concept of dynamic equilibrium.	**SE/TE:** 519-520, 521-522 **TE: 521 (Demonstration)**		
b.	Given an equation, identify the effect of adding either product or reactant to a shift in equilibrium.	**SE/TE:** 528-531 **TE: 529 (Demonstration), 530 (Demonstration), 531 (Demonstration and Additional Examples 17.4)**	***Introductory Chemistry in the Laboratory:*** Experiment 25	
c.	Indicate the effect of a temperature change on the equilibrium, using an equation showing a heat term.	**SE/TE:** 534-535 **TE: 534 (Demonstration)**		

STANDARD VI: Students will understand the properties that describe solutions in terms of concentration, solutes, solvents, and the behavior of acids and bases.				
Percentage of coverage in the *student and teacher edition* for Standard VI:_____ %		**Percentage of coverage not in student or teacher edition, but covered in the *ancillary material* for Standard VI: _____%**		
OBJECTIVES & INDICATORS		**Coverage in *Student Edition(SE) and Teacher Edition (TE)* (pg #'s, etc.)**	**Coverage in *Ancillary Material* (titles, pg #'s, etc.)**	***Not covered in TE, SE or ancillaries***
Objective 6.1: Describe factors affecting the process of dissolving and evaluate the effects that changes in concentration have on solutions.				
a.	Use the terms solute and solvent in describing a solution.	**SE/TE:** 451	***Introductory Chemistry in the Laboratory:*** Experiment 23	
b.	Sketch a solution at the particle level.	**SE/TE:** 452, 455, 474 (#8)		
c.	Describe the relative amount of solute particles in concentrated and dilute solutions and express concentration in terms of molarity and molality.	**SE/TE:** 455, 457-462, 474 (#4-5), 475 (#29-31), 476 **TE: 456 (Math Misconceptions), 458 (Additional Examples 15.3, 15.4), 459 (Additional Examples 15.5), 460 (Additional Examples 15.6), 461 (Additional Examples 15.7)**	***Introductory Chemistry in the Laboratory:*** Experiment 23	
d.	Design and conduct an experiment to determine the factors (e.g., agitation, particle size, temperature) affecting the relative rate of dissolution.	**SE/TE:**	***Introductory Chemistry in the Laboratory:*** Experiment 22	
e.	Relate the concept of parts per million (PPM) to relevant environmental issues found through research.	**SE/TE:**		

OBJECTIVES & INDICATORS		Coverage in *Student Edition(SE) and Teacher Edition (TE) (*pg #'s, etc.)	Coverage in *Ancillary Material* (titles, pg #'s, etc.)	*Not covered in TE, SE or ancillaries*
Objective 6.2: Summarize the quantitative and qualitative effects of colligative properties on a solution when a solute is added.				
a.	Identify the colligative properties of a solution.	**SE/TE:** ***This standard is addressed in the laboratory experiment.***	***Introductory Chemistry in the Laboratory:*** Experiment 23	
b.	Measure change in boiling and/or freezing point of a solvent when a solute is added.	**SE/TE:** ***This standard is addressed in the laboratory experiment.***	***Introductory Chemistry in the Laboratory:*** Experiment 23	
c.	Describe how colligative properties affect the behavior of solutions in everyday applications (e.g., road salt, cold packs, antifreeze).	**SE/TE:** ***This standard is addressed in the laboratory experiment.***	***Introductory Chemistry in the Laboratory:*** Experiment 23	
Objective 6.3: Differentiate between acids and bases in terms of hydrogen ion concentration.				
a.	Relate hydrogen ion concentration to pH values and to the terms acidic, basic, or neutral.	**SE/TE:** 496, 498-500, 507 (#5)		
b.	Using an indicator, measure the pH of common household solutions and standard laboratory solutions, and identify them as acids or bases.	**SE/TE:** 500 **TE: 499 (Demonstration)**		
c.	Determine the concentration of an acid or a base using a simple acid-base titration.	**SE/TE:** 504-505	***Introductory Chemistry in the Laboratory:*** Experiment 26	
d.	Research and report on the uses of acids and bases in industry, agriculture, medicine, mining, manufacturing, or construction.	**SE/TE:** ***Opportunities to address this standard can be found on pages:*** 487		
e.	Evaluate mechanisms by which pollutants modify the pH of various environments (e.g., aquatic, atmospheric, soil).	**SE/TE:** ***Opportunities to address this standard can be found on pages:*** 387, 486, 525		